STONEHOUSE PRESCRIBED BURNS AND JUNIPER CUTTING ENVIRONMENTAL ASSESSMENT
EA OR-026-99-47

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CHAPTER I. INTRODUCTION: PURPOSE OF AND NEED FOR ACTION

The Stonehouse Allotment is located 62 miles southeast of Burns, Oregon, on the northeast portion of Steens Mountain (see location map Appendix A).

An evaluation of rangeland monitoring data for Stonehouse Allotment was completed by a Bureau of Land Management (BLM) Interdisciplinary (ID) Team in April 1999, and approved by the Andrews Resource Area Field Manager on April 29, 1999. This evaluation determined that the Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Public Lands were not being met. Specifically, the watershed function of riparian/wetlands was not achieved, standards for watershed function of uplands (5,408 acres) were determined to be at-risk, functioning of ecological processes was also determined to be at-risk, and the standard for water quality and locally important species (redband trout) was not achieved. Livestock were determined to be a causal factor for not achieving the standards for watershed function of riparian/wetlands, water quality, and locally important species. The functionality of the watershed (uplands 5,408 acres) was determined to be at-risk due to the disruption of the historical fire frequency which allows juniper invasion and woody species dominance of these ecological sites. Although the current grazing practices were determined not to be a causal factor, historical livestock grazing was a contributor to this process. The evaluation further determined that ecological processes are functioning at-risk due to a fire-dependent ecosystem in which fire has been removed through fire suppression activities as well as grazing practices that removed fine fuels, thereby changing fire frequency.

On April 26, 2000, the Stonehouse Allotment Management Plan and Environmental Assessment (EA OR-026-99-47) was mailed to all interested publics of record. This EA analyzed several alternatives for livestock management, a No Action Alternative, and the reintroduction of fire into this ecosystem. After analyzing the comments of interested publics and consulting with them, it was apparent that further coordination with these publics as well as assistance from the Steens Mountain Advisory Council (SMAC), would be required to address livestock management.

Therefore, this document brings forward the analysis of the reintroduction of fire and 3 years of rest from livestock grazing presented in the original document and addresses the comments received from interested publics on the reintroduction of fire.

The Proposed Action is to burn approximately 35 percent (3,600 acres) of the Stonehouse Allotment. The burns would be in mountain sagebrush-bunchgrass communities, aspen, remnant aspen, and wet meadow plant communities. These burns would create a landscape mosaic within the treatment area of 40 to 55 percent of the mountain sagebrush-bunchgrass plant communities actually being burned and 45 to 60 percent unburned. Forty percent or less of the wet meadow plant communities would actually be burned. The aspen and remnant aspen plant communities identified for fire reintroduction (130 acres) would require juniper cutting to allow these communities to burn (see map Appendix D). These stands would be expected to have 90 to 100 percent burn and would require temporary net protective fences (8 feet in height) around them.

The Stonehouse Allotment would be rested from livestock grazing for 3 years (1-year preburn and 2 years post burn).

The purpose of the Proposed Action is to restore upland watershed health and to ensure the proper functioning of ecological processes within this portion of the watershed.

The Proposed Action is in conformance with the 1982 Andrews Management Framework Plan (MFP), the 1983 Andrews Grazing Management Final Environmental Impact Statement (EIS), the 1989 Final Oregon Wilderness EIS, Standards For Rangeland Health and Guidelines for Livestock Management for Public Lands Administered by the BLM in the States of Oregon and Washington, and H.R. 4828 (Steens Mountain Cooperative Management and Protection Act of 2000).

The plant community objectives which need to be achieved to restore upland watershed health and ensure proper functioning of ecological processes within this portion of the watershed are:

- to improve plant species diversity and community structure on deep loamy, subalpine slopes, stony loam, and swale ecological sites as measured by baseline monitoring;

- to create a mosaic of seral stages, increasing the herbaceous component from 5 percent or less to 20 percent of composition (measured by frequency of occurrence); and

- to reduce the western juniper trees by 70 percent, where juniper has encroached these ecological sites as measured by belt transects to determine density of woody species.

In aspen and remnant aspen plant communities the objectives are:

- to restore these communities to their historical niche on the landscape;

- to decrease live juniper density within the stands by 90 to 100 percent;

- to increase live aspen stems by 90 to 100 percent; and

- to increase herbaceous understory cover by 20 percent.

In wet meadow plant communities the objectives are:

- to increase by 10 percent the composition (measured by frequency of occurrence) of hydric species; and

- to increase the vegetation cover of hydric species by 10 percent.

The alternative to implementing the prescribed burns with juniper cuts as described above is No Action. This is a fire-dependent ecosystem which is well beyond the historical fire frequency for the associated plant communities. If fire continues to be excluded, aspen plant communities will no longer occupy their historical niche on the landscape. Mountain big sagebrush-bunchgrass communities will continue to develop toward juniper woodlands and/or continue toward woody species dominance losing herbaceous plant species. Without the stimulus of fire to allow hydric herbaceous plant species to become reestablished, wet meadows would also continue toward upland woody species dominance. The net result would be a nonfunctional watershed in which the ecological processes are modified from a natural state.

CHAPTER II. ALTERNATIVES INCLUDING THE PROPOSED ACTION

A. No Action Alternative

Under this alternative, there would be no prescribed burns, cutting of juniper in aspen stands or temporary protection fencing around burned aspen stands.

B. Proposed Action (Prescribed Burning and Juniper Cutting)

The Proposed Action is the reintroduction of fire through prescribed burning on approximately 35 percent of the allotment 3,600 acres**,** of which 500 acres is within Wilderness Study Areas (WSAs) (see proposed prescribed burn boundaries map Appendix D). Most of the area proposed for the reintroduction of fire is mountain big sagebrush-bunchgrass communities in an early transition state to juniper woodlands (approximately 60 to 70 percent).

There is a significant portion of the mountain big sagebrush/bunchgrass plant communities which are not in a transition state to juniper woodlands (30 to 40 percent). The mountain big sagebrush plants in these communities have increased in cover (40 to 45 percent measured cover) which allows these plants to take nutrients, block sunlight, and remove soil moisture which should be available to understory grasses and forbs. As a result, the understory species are stressed, often reduced to single leaf or stem using total energy reserves to perform life functions. The burn implementation objective for all mountain big sagebrush-bunchgrass communities would be to achieve between

40 to 55 percent of the area actually burned in a landscape mosaic of burned and unburned communities.

The wetland meadows on the south end would be burned after completion of the upland burns. The objective would be to create a mosaic of burned and unburned meadow communities to ensure a diversity of habitat and adequate cover for dependent wildlife species. The burn implementation objective for this area is to achieve 40 percent or less of these communities actually burned.

There are approximately 130 acres of aspen stands within the Stonehouse Allotment which would require cutting of juniper to enable the reintroduction of fire (see map in Appendix D for locations of aspen stands to be treated). The objective for prescribed fire would be to burn the entire stands to stimulate maximum aspen regeneration through suckering and to kill 90 percent or greater of the western juniper. To achieve these objectives, juniper cutting would be completed 2 months or more prior to the burn. Following burning the remainder of the live juniper within these aspen stands would be cut to allow the full release of the aspen clone. These stands would have temporary protective fences constructed to prevent browsing damage by deer, antelope, elk, and cattle. The temporary protective fences would be constructed of net galvanized fencing 8 feet in height to reduce the possibility of animal access or entrapment. Large juniper would be left standing on the exterior of these aspen stands to be used as corner and line posts to support the net fencing. The fence would be anchored with rebar where large gaps exist between the bottom of the fence and the ground to ensure antelope or deer would not be able to get under the fence and become entrapped.

The protective fences would be inspected each spring following snowmelt and repaired as needed to maintain their integrity. Within the exclosure, median aspen height would be measured each fall to determine if they had reached the 7-foot level at which time the fences could be removed. (At this height the apical bud of the sapling is above the height of grazing animals.) Saplings are estimated to reach this height in 2 to 5 years. Those higher elevation aspen stands not being encroached by juniper would not be included in the prescribed burn.

No mechanical catlines would be used to control the extent of these burns. The methods used to achieve the landscape mosaic burns described above include but are not limited to the following:

- burning during September or October when the burning period is typically shorter;

- control time of ignition (burning later in the day when less percentage of burn is

desired which uses nighttime humidity to extinguish the fire);

- burning black lines at night to control boundaries of daytime ignition;
- using roads, topographical features, trails and sparse vegetation to control the scope of the fire;

- using weather forecasts, on-site weather readings as well as monitoring fuel moisture on-site to determine when to start ignition.

The historical structure identified (Ward Cabin) would be secured by burning out an area around the structure to ensure no damage would occur.

The reintroduction of fire would require 3 years of rest from livestock grazing, 1-year preburn to ensure adequate fine fuels, and 2 years following the burn to ensure plant community development.

The rangeland monitoring outlined below was designed by the BLM ID Team to measure the achievement of the plant community objectives. A representative site for monitoring would be located within each plant community type. At each of these sites, a 3-foot by 3-foot photo trend plot would be established, with plot photos and landscape photos taken. Also, to assess herbaceous, shrub, and tree cover and shrub and tree density, a step point transect and a line intercept transect, with a shrub and tree belt transect, would be completed (Burns District prescribed burn methodology 1996). A determination of erosion condition class (Soil Surface Factor (SSF) rating) would also be completed. The baseline data at each site would be collected before the prescribed burns, and the studies repeated at 2 and 5 years following the burns and would continue at 5-year intervals thereafter.

Monitoring would include observations for noxious weeds.

CHAPTER III. AFFECTED ENVIRONMENT

A. Critical Elements

1. Air Quality

The air quality currently meets or exceeds air quality standards outlined by the Oregon Department of Environmental Quality (DEQ).

2. Cultural Heritage

The area was surveyed for cultural resources such as old carvings in aspen

stands, rock art, and structures. The only identified cultural resource was the Ward Cabin, noted on the USGS quad at T. 30 S., R. 35 E., Section 29, SE¼SE¼. This historic structure is made of stone with a wood roof, located next to a 1-acre or less wet meadow.

3. Noxious Weeds

There are no known noxious weed infestations within the Stonehouse area. Native plant communities may be open to noxious weed introduction following any natural or human-caused disturbance if a seed source is introduced into a susceptible site.

4. T&E Animals

There are no known endangered species in the general area. Threatened species known to exist within the Steens area are peregrine falcons and bald eagles. There are no recorded sightings of these species in the Stonehouse Allotment or the immediate surrounding area.

There are three species of wildlife that have increased monitoring due to population concerns (Special Status Species). These species are California bighorn sheep, sage grouse, and redband trout. Although California bighorn sheep are found mostly on the east face along the steep slopes and along the east rim portion, occasionally, they are seen west of the rim within the allotment. The allotment is late spring, summer, and fall habitat for sage grouse. Currently, there is no direct monitoring by BLM for these species. Oregon Department of Fish and Wildlife (ODFW) conducts annual bighorn sheep counts and sage grouse brood counts in and adjacent to the allotment. The BLM does fund and receive research data from Oregon State University on sage grouse habitat use in prescribed burns.

Redband trout are in Riddle Creek, the only stream in the allotment having a fishery.

5. T&E Plants

There are no Threatened or Endangered plants known to exist within the Stonehouse area. The only Bureau Sensitive, plant species known to exist in the area is an endemic species, *Castilleja pilosa var. steenensis*, commonly known as the Steens Mountain paintbrush. This species is associated with low sagebrush-bunchgrass communities found on gravelly windswept ridges.

6. Water Quality (Drinking/Ground Water)

No current or known past uses in the area would affect ground water. During 1995, monitoring at a site immediately downstream of the allotment on Riddle Creek determined water temperature did not meet the State of Oregon water quality standard (17.8 °C maximum 7-day rolling average of the daily maxima). The 7-day average of the daily maximum water temperature measured was 23.61 °C. This site was again monitored the last week of July 1999, and had a maximum 7-day rolling average of the maximum daily water temperatures of 21.98 °C. In 1996, the stream reaches of Riddle Creek within Stonehouse Allotment were placed on the State 303d water quality limited list due to temperature. The main contributors to the elevated water temperatures are surmised to be a lack of deciduous woody riparian vegetation and excessive bank erosion resulting in insufficient shade, low flows, and a wide, shallow channel. No water quality data has been collected for other streams in the area.

7. Wetlands and Riparian Zones

The Stonehouse Allotment contains approximately 4.00 miles of perennial streams and 13.00 miles of ephemeral or intermittent channels. The perennial streams include Riddle, Stonehouse, and Little Stonehouse Creeks, as well as scattered tributaries flowing from springs. Also, in the upper reaches of both Riddle and Deep Creeks (Paddle Meadows) are approximately 700 acres of wet meadow areas.

The upper reach of Riddle Creek is a low gradient stream with an associated wet meadow. In 1998, this stream segment was rated by an ID Team as functioning at-risk with a stable trend. The 1999 greenline data indicate that the riparian plant communities lack the diversity of herbaceous hydric species which would be expected in a properly functioning system.

The remainder of Riddle Creek is a moderate gradient stream with a cobble substrate, rated as functioning at-risk with an upward trend. The greenline data again indicates that the riparian vegetation lacks the cover and diversity of herbaceous hydric and deciduous woody species expected in a properly functioning system. The Riddle Creek Meadows and Deep Creek (Paddle Meadows) lack the cover of herbaceous hydric species expected in properly functioning meadows. Although hydrologic monitoring indicates these meadow systems are reduced in potential acreage, water storage capacity, and have accelerated erosion; rangeland monitoring indicates a stable trend in condition.

Stonehouse and Little Stonehouse Creeks are high gradient streams with a cobble/boulder substrate, and are rated in Proper Functioning Condition PFC). The diversity of riparian overstory vegetation includes willow, dogwood, elderberry, and chokecherry. Riparian herbaceous plants exist in scattered areas where there are fine soil deposits and sufficient sunlight is allowed through the overstory vegetation. These streams resist degradation because of their well-armored streambed and banks. There are a few segments with reduced slope which lack woody vegetation, have a higher width:depth ratio than optimal, and exhibit some bank damage. Along Stonehouse Creek, below the road cut, are some raw erosive slopes which add sediment during rainfall or snowmelt events. However, these problems are infrequent and do not alter the streams' functionality rating.

A 1987 riparian habitat inventory of upper Stonehouse Creek rates the habitat quality as fair with 80 percent of plant succession as static and 20 percent as downward. Bank and slope erosion are also noted on 5 to 10 percent of the stream, occurring where cattle can easily access the creek.

8. Wilderness and Wilderness Study Areas

The Stonehouse WSA (2-23L) contains 21,325 acres, of which 1,099 acres are within Stonehouse Allotment. The Lower Stonehouse WSA (2-23M) contains 8,090 acres, of which 2,551 acres are within Stonehouse Allotment (see map for WSA boundaries within the allotment).

Wilderness values associated with both WSAs include scenic quality and a variety of botanical and wildlife species. Stonehouse WSA has intermittent lakes and critical deer winter range which have been identified as special features. These values associated with the WSAs are site-specific and are not found in the Stonehouse Allotment.

More detailed information can be obtained in the Oregon Wilderness Study Report, Volume 1, October 1991 (BLM-OR-EA-91-43-8561.6).

9. Migratory Birds

There are many species of neotropical songbirds found in the area, including ground nesters, cavity nesters, and shrub and tree nesters. These birds inhabit the area in the late spring, summer and fall, and many nest in this area.

10. Remainder of the Critical Elements

The remainder of the critical elements are nonexistent in the area or unaffected, specifically environmental justice, farmlands (prime or unique), floodplains, hazardous materials, American Indian religious concerns, paleontology, and Wild and Scenic Rivers. These unaffected resources will not be discussed further in this document.

B. Noncritical Elements

1. Fire Management

All prescribed natural fire in the Resource Area is managed by an appropriate suppression response because there are no provisions to manage natural fire in the land use plan. Appropriate suppression method depends on fire location, size, other fire activity in the fire district and whether or not the area is a WSA.

2. Fisheries

As described in the T&E animal section, Riddle Creek is the only stream in the area that has a fishery which is a population of redband trout. There is no existing information about this fish population.

3. Grazing History and Current Livestock Management

In 1902, David Griffiths published a report for the U.S. Department of Agriculture on forage conditions on the northern border of the Great Basin. In this report, he relates information and photographs of grazing use on Steens Mountain based on his observations during a field study completed in 1901.

Mr. Griffiths states, "The most closely pastured region visited was Steins (Steens) Mountains. On the whole trip of three days we found no good feed, except in very steep ravines, until we reached the vicinity of Teger (Kiger) Gorge."

Griffiths (1902) made a conservative estimate of 182,500 sheep summering on Steens Mountain. There is no recorded number of cattle on Steens Mountain, but it is generally accepted that cattle use was much higher than at present. During the first 35 years of this century, domestic livestock would follow the snowline up the mountain and be driven off the mountain in the fall by snowstorms. By 1936, 2 years after passage of the Taylor Grazing Act, the transient sheep outfits (those without base property to support their flocks during the winter) were forced off the mountain (Bill Bradeen, 1972).

This area was part of the Alvord individual allotment included within the Diamond adjudication unit in 1965 and 1966. The Stonehouse area was encompassed in the Alvord individual AMP, implemented in 1967. At that time, the area was grazed in a deferred rotation system of June 15 to August 30 one year, and July 30 to August 30 the next. Because much of the private rangeland to the south and west of the current boundary was included with the Alvord individual allotment, comparisons of stocking levels between them to today are not possible.

In 1970, the current Alvord Allotment boundaries were developed through transfers from the Mann Lake Ranch. At the time, the current permittee acquired the Federal grazing permit for the Alvord Allotment which included the Stonehouse Pasture. In 1985, the Alvord AMP was rewritten and approved. This document described the use for Stonehouse Pasture as 700 cattle from July 1 to September 15 equaling1,772 AUMs, in what was described as a deferred grazing use.

In 1995, through agreement with the permittee, the Stonehouse Pasture was withdrawn from the Alvord Allotment and designated as a separate allotment. The Alvord AMP did not adequately address management of Stonehouse Pasture which is at 6,000 to 7,000 feet elevation, physically separated from Alvord Allotment and has always been managed separately.

The current grazing permit is for 700 cattle from June 15 to September 15, equaling 2,117 AUMs. Fifty-three AUMs are allowed for exchange-of-use of private land within the allotment. The allotment is an Improve (I) category allotment for the following reasons:

a. Range condition is not satisfactory
b. Forage production potential is high and present production is moderate
c. Present management is unsatisfactory
d. Resource use conflicts and controversy exist
e. Riparian/wet meadow condition and trend are unsatisfactory

The management category ranking was completed when Stonehouse was a pasture of Alvord Allotment, which was ranked as Number 5 in priority for allocation of funding and planning to improve management.

4. Recreation

Stonehouse Canyon is an important public access road to the northeast part of Steens Mountain, which offers outstanding recreational opportunities. The access road bisects the two WSAs and offers some of the best scenic views in the area.

Recreational opportunities include driving for pleasure, hunting, fishing, hiking, backpacking, and horseback riding. Opportunities for primitive recreation and solitude are also outstanding within the area.

Observation of traffic patterns on the Stonehouse Canyon access road and vehicular ways has indicated an increase in recreational use over the past several years.

5. Soils

The soils in the area are variable in depth from shallow to deep (less than 20 inches to 60+ inches) depending on the location on the landscape. Soils on slopes are generally shallow whereas those in depressions and bottoms are deep. These soils have well-developed horizons with surface textures varying from a loam to clay loam. Most of the soils have coarse fragments throughout the profile. Due to current plant community conditions, some slight accelerated erosion is noted on some of the upland soils (see Appendix B: Analysis of Rangeland Health Standards: Watershed Function-uplands).

6. Vegetation

There are two dominant upland vegetation communities within the Stonehouse Allotment, the first of which is low sagebrush, Idaho fescue with associated forbs located on gravelly soils on the ridges. The second major upland plant community is mountain big sagebrush, Idaho fescue, and mountain brome with associated forbs. This community is located in swales, subalpine slopes, and bottoms with deep to moderately deep soils typically gravelly to stony. Many of these communities have juniper encroachment and are in the early stage of woodland development.

Aspen communities exist in small pockets scattered on the north and east aspects. These communities developed on moderately deep to deep loamy soils in areas where snow accumulates. The understory species of this community is similar to the mountain big sagebrush communities but with a greater diversity of forbs. Many of the aspen stands have western juniper encroachment.

Approximately 700 acres of wet meadows are located mainly in the headwater meadows of Riddle Creek and Deep Creek. These meadows are dominated by mountain big sagebrush, silver sagebrush, bluegrasses, redtop, sedges, rushes, dandelions, clover, yarrow, and various other forbs. The major streams include Stonehouse and Little Stonehouse which support a deciduous woody overstory and a diverse herbaceous understory. Riddle Creek supports a mixed herbaceous community of bluegrasses, redtop, various forbs, sedges, and rushes with only a scattered mature, single-age class of willow.

7. Visual Resource Management

The Stonehouse area is within Visual Resource Management (VRM) Class II management objectives outlined in the land use plan. This VRM class outlines that management activities may be seen but should not attract attention of the casual observer. Those portions of the area within WSAs are managed in VRM Class I which outlines that the existing character of the landscape must be preserved. It provides for natural ecological change and allows only very limited management activity.

8. Wildlife

The allotment is late spring, summer, and fall range for mule deer, elk, and antelope. Upland game birds include mourning doves in the spring and summer. Chukars are abundant in the lower slopes and within Stonehouse Canyon. Valley quail are also found in Stonehouse Canyon and lower elevations within the allotment. Common snipe inhabit areas around springs, wet meadows, and riparian areas.

Many raptors are found within the general area such as bald eagles, peregrine falcons, golden eagles, prairie falcons, red-tailed hawks, kestrels, and great horned owls. The area also provides habitat for many other bird species and a myriad of small mammals as well as badgers, cougars, bobcats, and coyotes.

9. Woodland Resources (Juniper Encroachment)

Due to human interruption of the natural fire frequency, past grazing practices, and possible changes in the climate, western juniper has encroached into much of the Stonehouse Allotment (Mehringer and Winyard, 1990; Johnsen, 1962; Burkhardt and Tisdale, 1976; Shinn, 1980; Miller, R.F. and Rose, J.A., 1995; Miller, R.F. and Wigard, P.E., 1994; Miller, Richard F. and Rose, J.A., 1999). As these trees increase in size and density, plant species diversity and plant community structure declines. Such plants as aspen, mountain big sagebrush, snowberry, serviceberry, bitterbrush, Idaho fescue, bluebunch wheatgrass, Thurber needlegrass, various lupines, and Indian paintbrush are reduced in number.

Additionally, as juniper density and cover increases the amount of bare ground also increases as the understory plants are reduced (Burkhardt and Tisdale, 1976; Miller, R.F., Svejcar, T.J., and Rose, J.A., 2000; Bates, J.D., Miller R.F., and Svejcar, T., 1998). More surface soil movement has been observed in dense western juniper stands where understory plants have been reduced (Davenport, D.W., Breshears, D.D., Wilcox, B.P, and Allen, C., 1998; Buckhouse, J.C. and Maitison, 1980).

CHAPTER IV. ENVIRONMENTAL CONSEQUENCES

A. No Action Alternative Anticipated Impacts

Critical Elements:

1. Air Quality

There would be no impacts to air quality under the No Action Alternative.

2. Cultural Heritage

There would be no impacts to cultural resources under the No Action Alternative.

3. Noxious Weeds

There are no known infestations of noxious weeds. Monitoring would be continued because as described in Chapter III, any disturbance human caused or natural may create site susceptibility. The risk of noxious weed invasion is high with the No Action Alternative because of the likelihood of an eventual catastrophic fire. As these mountain sagebrush-bunchgrass plant communities continue beyond a historic fire regime and develop toward a juniper woodland or a shrub dominated ecosystem, natural fires tend to be more extensive and create enough heat to kill understory plants. These conditions are conducive to noxious weed invasion.

4. T&E Animals

There are no known impacts to T&E animals under this alternative. The No Action Alternative would have effects on the three BLM sensitive species discussed in Chapter III.

Much of the California bighorn sheep habitat is in transition to juniper woodlands with an associated loss of herbaceous understory. These plant communities provide less of the plant species, especially forbs, which are important in this animal's diet. The long-term effects would be animals trailing further to fulfill dietary requirements.

Western sage grouse are sagebrush obligate species and inhabit the Stonehouse Allotment in late spring, summer, and fall. During these seasons the western sage grouse diet is mostly herbaceous (forbs) and insects. The transition from mountain sagebrush-bunchgrass to juniper woodlands which would continue under the No Action Alternative has long-term negative effects on sage grouse habitat. These effects are loss of herbaceous understory as juniper trees fully occupy a site and the trees provide perches for sage grouse predators resulting in a loss of sage grouse habitat. A similar loss of herbaceous understory occurs in the existing mountain big sagebrush-bunchgrass communities which are not in transition to juniper woodlands. These plant communities have a herbaceous understory which is stressed and reduced in cover due to the dominance of sagebrush cover. The lack of varied seral stages of these plant communities lessens habitat diversity for the sage grouse, which may also effect the variety and quantity of insects available to these birds.

Wetland meadows are critical habitat for these birds (especially hens with broods) during the summer and early fall to provide green forage high in protein and the abundant insects needed. These meadows have lost hydric herbaceous species with more xeric woody species being established. This is the result of improper livestock grazing and fire being excluded from a fire-dependent ecosystem. The long-term effects of the No Action Alternative is loss of critical habitat for this species.

The No Action Alternative has an indirect effect on redband trout. The wet meadows and uplands which are not functioning properly or are at-risk, indirectly affect streamflows (through the catch and release of precipitation), resulting in reduced streamflow and increased water temperatures during the hot season. These increased temperatures may provide periods of stress for redband trout. Current livestock grazing, which has limited the riparian plant community shading necessary for lowering stream temperatures, may provide a more direct source of temperature stress for this species.

5. T&E Plants

There are no known effects for T&E or sensitive plants under the No Action Alternative.

6. Water Quality (Drinking/Ground Water)

There are no known effects on ground water or drinking water identified under the No Action Alternative. The water quality temperature standard for the State of Oregon for streams with salmonoid populations would continue not to be met under this alternative.

7. Wetlands and Riparian Zones

Under the No Action Alternative, Riddle Creek would continue to function at-risk with a lack of herbaceous hydric species diversity and cover in all segments and a lack of deciduous woody species in the lower segment of this stream. The wet meadows within the allotment would continue to function at-risk and to lack hydric species cover.

8. Wilderness and Wilderness Study Areas

The removal of the natural function of fire in this fire-dependent ecosystem due to historic grazing practices and fire suppression activities would continue under the No Action Alternative. The long-term effects on mountain big sagebrush-bunchgrass and wetland meadows plant communities would be the continuation of development toward juniper woodlands and woody species dominated plant communities. These plant community changes would negatively impact the naturalness of the area.

9. Migratory Birds

Under the No Action Alternative, plant communities would continue transition toward juniper woodlands and woody species dominance with reduced herbaceous understory. The long-term effect is a loss of structural and habitat diversity on a landscape level. When western juniper density and cover increase to the point that shrub and herbaceous understory are suppressed, avian species diversity decreases (Reinkensmeyer and Miller, 2000).

Noncritical Elements:

1. Fire Management

   Under the No Action Alternative, fire would continue to be excluded from this ecosystem. The historical fire regime, in the mountain big sagebrush-bunchgrass communities, is estimated to be 15 to 20 years (Burkhardt and Tisdale,1976). Within the Stonehouse Allotment, these communities are estimated to have been without fire 25 to 60+ years (Buchanan, 1998 and 1999). Due to human interruption of the natural fire frequency, many of the plant communities are in a transition state to juniper woodlands. Other plant communities have woody species dominance which has reduced the herbaceous plant cover.

2. Fisheries

   The effects to the only fishery of the No Action Alternative is discussed under T&E species.

3. Livestock Management

   Under the No Action Alternative, there would not be 3 years of rest from livestock grazing. However, changes in livestock management would be implemented before the next active licensed use is authorized in order to be in conformance with the Standards for Rangeland Health and Guidelines for Livestock Grazing Management for Public Lands Administered by the BLM in Oregon and Washington (August 12, 1997).

4. Recreation

   Under the No Action Alternative, no short-term effects on recreation are anticipated. There may be long-term effects on recreation activities due to loss of habitat diversity for wildlife species resulting from the continued exclusion of fire.

5. Soils

There are no short-term effects to soils anticipated with the No Action Alternative. The current situation is that slight accelerated erosion is occurring on the ecological sites where the herbaceous understory is reduced in cover due to juniper encroachment or mountain big sagebrush dominance (see Appendix B: Analysis of Rangeland Health Standards: Watershed Function-uplands). In the long term the erosion will increase on these sites with the decrease in ground cover. Increases in western juniper and associated reductions in understory vegetation have been found to increase bare ground and the potential for erosion (Bates, 1998; Eddleman, 1986; Miller et al., 2000). Similar reductions in herbaceous understory is expected as mountain big sagebrush increases in overstory dominance, and moderate erosion would occur on these sites in the long term.

6. Vegetation

The allotment evaluation completed in 1999 determined that watershed functionality was at-risk due to plant composition, plant community structure, and lack of direct ground cover within the mountain big sagebrush-bunchgrass plant communities. These communities also had slight accelerated erosion. Although livestock were not a causal factor, fire exclusion from a fire-dependent ecosystem was determined to be. Herbaceous plant cover is expected to continue to be reduced as juniper and sagebrush dominance increase. A continual loss of plant species and structural diversity on a landscape scale would occur, resulting in further loss of direct ground cover. Erosion would accelerate at a moderate rate.

Western juniper have encroached on the aspen plant communities with most being in the mid to late state of transition to juniper woodlands. Although in the short term, little change would be noticed; in the long term, most of these communities would be juniper woodlands, and would no longer occupy their natural niche on this landscape. These aspen stands provide plant species, structural diversity, and critical habitat for many wildlife species. The juniper woodlands create more xeric conditions further deteriorating watershed condition and the functioning of ecological processes.

There would be little change expected in the low sagebrush-bunchgrass plant communities.

7. Visual Resource Management

There would be no effects anticipated to VRM under the No Action Alternative in the short term. In the long term visual resources would be negatively affected due to the loss of diversity of plant communities on the landscape.

8. Wildlife

Under the No Action Alternative, fire would continue to be excluded from this ecosystem. The plant communities and dependent wildlife of Steens Mountain evolved with fire. As explained previously, the plant communities identified for the reintroduction of fire are many years beyond the historic fire regime. These changes have reduced and will continue to reduce plant community and structural diversity on a landscape level, resulting in less habitat diversity for wildlife species.

The habitat is good for some species in its present condition, but these plant communities are dynamic. Many of the mountain big sagebrush-bunchgrass communities are being encroached by western juniper. Research on Steens Mountain found that western juniper grows slowly in its first 30 to 40 years, usually averaging 3 feet in height in that time period (Miller and Rose, 1995). Once the plant grows above the canopy of the sagebrush overstory (around 3 feet), the growth rate increases and over the next 10 years western juniper grows another 3 feet. Other changes would include a reduction in sagebrush cover and density to offset the increase in western juniper growth. This continues until the sagebrush is eliminated from the plant community; however, it may or may not occur for herbaceous plant species. A similar situation occurs in areas of dense sagebrush, with little herbaceous plant production beneath the dense shrub cover. Competition from the sagebrush reduces many of these grasses and forbs to a single leaf, just enough to offset the cost of staying alive and eventually they will die off as the overstory cover increases.

Aspen stands, which depend on fire for their perpetuation, are critical habitat for many wildlife species. It is estimated 40 to 50 percent of the existing aspen acreage identified for the reintroduction of fire would be juniper woodlands within 15 to 20 years.

Varied seral stages of native plant communities provide the most diverse habitat for wildlife, but would continue to be lacking in the Stonehouse Allotment under this alternative.

9. Woodland Resources (Juniper Encroachment)

Under the No Action Alternative, juniper woodlands would be expected to continue to expand, replacing mountain sagebrush-bunchgrass and aspen communities which are dependent on periodic fire. Aspen communities would be reduced in acreage as previously described. The long-term effect would be that western juniper woodlands would be the dominant plant community within the Stonehouse Allotment below 7,000 feet.

B. No Action Alternative (Cumulative Effects)

The cumulative effects of the No Action Alternative would be continued ecological changes toward a nonfunctional watershed with ecological processes functioning at-risk. The indicators of this are a loss of aspen communities, expansion of juniper woodlands creating more xeric conditions, mountain big sagebrush-bunchgrass communities with overstory cover which is crowding out herbaceous understory, encroachment of xeric species into wetland meadows, and increasing accelerated erosion.

C. Proposed Action Anticipated Impacts (Prescribed Burning and Juniper Cutting)

Critical Elements:

1. Air Quality

Air quality would be affected during actual burning; however, Parts Per Million (PPM) of particulate matter would be under acceptable levels. This, added to prevailing wind patterns away from population centers, would have little to no detrimental effects.

2. Cultural Heritage

The only cultural resource identified was the Ward Cabin which is made of stone and has a wood roof. The structure itself, except for the roof, would not burn and is protected by its location in a wet meadow. This cabin would be further protected with black lining around it to ensure fire could not threaten the roof. As a result of these efforts, there would be no effects to cultural resources.

3. Noxious Weeds

Prescribed fires burn cool enough and by performing them at a time when herbaceous species are not actively growing, understory species are not damaged. The prescribed burn area is native plant communities well adapted to fire. Prescribed fire has been implemented on these ecological sites on other portions of the Steens with no noxious weed establishment. However, any disturbance factor, including prescribed burning requires monitoring for noxious weeds. No effect is anticipated from the Proposed Action.

4. T&E Animals

There are no known effects to T&E animals under this alternative. The Proposed Action would have effects on the three BLM sensitive species discussed in Chapter III. There are an estimated 200 to 300 acres within the prescribed burn area that are actively used by California bighorn sheep with a potential for more of the area to be frequented by this species. The prescribed fire would provide varied seral stages of plant communities with increases of available forbs critical to the bighorn diet. The later seral communities would provide protective cover for the species.

The short term effects of prescribed burns would be to remove some of the sagebrush cover on which western sage grouse are dependent. Since this burn would occur in September or October, sage grouse may still be using the area for late summer brooding, however, they should move to other available habitat during this disturbance. The reduction in mountain big sagebrush cover would meet requirements for sage grouse the following summer with the mosaic of unburned and burned mountain big sagebrush-bunchgrass communities. The Proposed Actions are in conformance with the current Interim Sage Grouse Guidelines adopted by the BLM in Oregon.

The juniper encroaching into much of the mountain big sagebrush-bunchgrass communities provide perches for raptors and, therefore, lessens use by sage grouse. As the height of these trees increases, predators increase and use as habitat by sage grouse declines further. The proposed prescribed burns would remove much of the juniper encroachment, returning these plant communities to a seral state which would again be available as sage grouse habitat.

Western sage grouse would benefit from prescribed fire in these mid-elevation areas in the long term because of the increase in diversity of habitat, additional forb species, and herbaceous cover, and the increase in insect production. This is summer and fall habitat for this species, a time in which chicks are dependent on insects and forbs to provide protein in their diets (Crawford, J.A., McDowell, M.D., January 1999 Sage Grouse Habitat and Sage Grouse Response to Prescribed Burning in Oregon, Page 233, Pages 17 to 30).

Canopy cover of mountain big sagebrush is expected to return to 10 to 15 percent in the area 8 to 10 years post-burn. Sage grouse should use this area as in pre-burn conditions at this time.

Most of the wet meadows within the proposed burn areas have been encroached by sagebrush due to livestock grazing practices and the exclusion of fire from a fire-dependent ecosystem. The dominant sagebrush species is silver sagebrush (*Artemisia cana*) which will resprout following burning, and provide adequate cover for sage grouse within 3 years of the burn. Burning would help to return hydric species dominance to these meadows which would improve this habitat for sage grouse.

An indirect effect on redband trout would be through the plant community changes from fire which would allow the proper functioning of the watershed. These changes affect streamflows (through the catch and timing of release of precipitation). The diverse plant communities and associated rooting systems capture water on-site more efficiently. The release of captured water is provided to the system in a manner which maintains flows during the hot season, thus providing cooler stream temperatures for redband trout. Current livestock grazing which has limited the riparian plant community shading necessary for lowering stream temperatures may provide a more direct source of temperature stress for this species. The 3 years of rest from livestock grazing would allow initial recovery of the riparian plant community.

5. T&E Plants

There are no known effects to T&E plants under the Proposed Action. The one BLM sensitive plant species known to exist within the proposed prescribed burn area is the Steens Mountain paintbrush. This species grows on gravelly windswept ridges which support low sagebrush-bunchgrass plant communities. These communities are not targeted for prescribed burning, however, 5 to 10 percent of these communities within the fire perimeter could be burned. There would be no loss of these plants expected because not only would they be dormant at the time of burning, but burning itself would be at cool temperatures. It is unknown if this species increases in density and cover like many other forbs do following fire.

6. Water Quality (Drinking/Ground Water)

There are no known effects to the ground water or drinking water identified under the Proposed Action. As identified in the T&E animal section for redband trout, the watershed improvements associated with fire may effect streamflow in a manner which would provide cooling stream temperatures. This would move toward the accomplishment of water quality temperature standards for the State of Oregon for streams with salmonoid populations.

7. Wetlands and Riparian Zones

The reintroduction of fire would not, for the most part, directly affect riparian communities. However, prescribed fire would be in uplands immediately adjacent to the west side of Riddle Creek, and may back into portions of the riparian zone along its west side. This would cause less than 1 percent of the riparian community to burn under down slope conditions and would result in a temporary (fall, winter, early spring) loss of cover until the beginning of the next growing season. The riparian herbaceous species would be dormant when burned and would immediately regrow when adequate temperatures and soil moisture are available. Any burned deciduous woody species would resprout the next spring (BLM monitoring South Steens 1998, 1999, 2000). These plant communities would benefit from the 3 years of rest from livestock grazing outlined in the Proposed Action. This would allow initial recovery to the plant community which would continue when improved livestock management is implemented in the future.

The reintroduction of fire on the wet meadows with the associated 3 years of livestock grazing rest would allow herbaceous hydric species to reestablish and to increase in cover. This would improve the ability of these plant communities to become a functional portion of this watershed.

8. Wilderness and Wilderness Study Areas

Approximately 85 percent of the prescribed fire would occur outside the WSAs. Two areas targeted within the WSAs total approximately 500 acres. Impacts to solitude and naturalness would be minimal and short term. Positive effects would occur in the following growing season with long-term benefits in vegetative diversity enhancing the naturalness of the area.

With the overall improved ecological condition of the area, enhancing the naturalness within the WSAs would allow for a better recreational/wilderness experience for the visitor.

9. Migratory Birds

The effects of the prescribed burns in the short term would be to remove some of the vegetation cover upon which sagebrush-dependent species rely. Most species would move to adjacent areas to escape the disturbance. As all other species in this ecosystem, migratory birds that are part of the system evolved with periodic fire. The timing of the burn (in the fall) would ensure that most of the neotropical migratory birds would have migrated out of the Stonehouse area for the year.

Burning would initially reduce structural diversity within the area, but actually increase structural diversity on a landscape level. Currently, there is an almost continuous cover of sagebrush and/or western juniper across the area planned for prescribed burns. Reinkensmeyer and Miller (2000) found that as western juniper density and cover increased, avian diversity increased, but then as western juniper began to suppress shrubs and herbaceous vegetation, it decreased. Burning would provide open areas (diversity of habitat) within this landscape. The long-term effect of these landscape level plant community changes would be to improve habitat for migratory birds.

Noncritical Elements:

1. Fire Management

   Under the proposed prescribed burns and juniper cutting this fire-dependent ecosystem would have a mosaic of seral stages of plant communities across the landscape which would be closer to what would be expected on the landscape under a historic fire regime. The long-term effect would be to return the landscape to a more natural fire frequency.

2. Fisheries

   The effects to the only fishery of the Proposed Action is discussed under T&E species.

3. Livestock Management

   Under the Proposed Action, there would be 3 years of rest from livestock grazing. Changes in livestock management would be implemented before the next active licensed use is authorized in order to be in conformance with the Standards for Rangeland Health and Guidelines for Grazing Management for Public Lands Administered by the BLM in Oregon and Washington.

4. Recreation

   Under the Proposed Action, the short-term effects would be negative for the recreationist due to the closure of the area during the actual burning. Recreationists in adjoining areas may be affected from smoke during the burning process. Immediately following the burns, those portions of the landscape that are actually burned may be visually unattractive and less desirable for some forms of recreation.

   The long-term effects of improved watershed health, increased plant community diversity, structural diversity, and increased habitat diversity for wildlife would improve the landscape for recreational use.

5. Soils

There is a small risk (estimated less than 10 percent) of accelerated soil erosion as a result of removal of vegetation cover from burning prior to the first growing season. However, the mosaic of burns outlined provides for burned and unburned plant communities within the fire reintroduction area. These unburned plant communities would provide buffer areas to collect any sediment which could possibly move off-site. Previous experience with prescribed burns on similar ecological sites has resulted in little to no detectable soil movement (BLM rangeland monitoring of prescribed burns 1997 and 1998 on Steens Mountain). Additionally, in burned areas, active rooting systems of herbaceous and inactive rooting systems of shrubs and western juniper hold the soil in place until existing plants regrow and new plants become established.

The long-term effects of the Proposed Action to soils would be to increase the efficiency of water use on site, reducing overland flow and erosion potential. The mosaic of seral stages of plant communities resulting from the burns with their varied root systems (fiberous and tap), increased vegetation cover and ground cover would provide these long-term effects.

6. Vegetation

The reintroduction of fire would have the least impact on the low sagebrush-Idaho fescue plant communities, because only 5 to10 percent of these communities would be affected. Fire would increase herbaceous species and create a mosaic of seral stages providing plant species diversity, structural diversity, and varied habitat for dependent wildlife species.

The mountain big sagebrush-Idaho fescue-mountain brome plant community types would improve in watershed function with the reintroduction of fire. The release of herbaceous understory would increase the efficiency of water use on the site, reducing overland flow and erosion potential. An increase in plant species and structural diversity would also result from the reintroduction of fire. A mosaic of seral stages, with older shrub-dominated communities, and herbaceous-dominated communities would improve watershed function and increase habitat diversity for wildlife. Within 2 to 3 years, mountain big sagebrush would reestablish on burned sites and provide significant canopy cover (10 to15 percent) within 8 to 10 years.

Aspen clones would be stimulated by fire to root sprout. These young plants would increase stand density, restoring stand health allowing these communities to perpetuate and eventually restore them to their historical presence on the landscape. The changes away from the transition to juniper woodlands over to aspen communities would return hydric conditions to this portion of the landscape, improving watershed function and the functioning of the ecological processes.

The three consecutive years of rest from livestock grazing, 1-year prior and 2 years following the burn, would allow for maximum reestablishment of upland plant communities.

7. Visual Resource Management

Short-term negative visual effects would occur due to burnt plant communities and dead standing juniper skeletons. Positive effects would be seen the following growing season with the release of herbaceous growth and the diversity of plant communities. There would also be a short-term negative visual effect 2 to 5 years from the temporary protective fences which would be constructed around burned aspen stands. The mosaic pattern of burn and unburned vegetation would provide a variety of landscape patterns. There would be long-term benefits to visual resources through the improved ecological condition of the landscape.

8. Wildlife

The short-term effects of prescribed burns would be to remove cover on which certain species of wildlife are dependent. This would apply to sage grouse, sage sparrows, and other sagebrush-dependent species. Since this burn would occur in September or October, most of these species, especially neotropical migratory birds, should have migrated out of the area. Also, in the short term, mule deer fawning habitat would be impacted in close proximity to some of the lower elevation aspen stands which would be burned and fenced 2 to 5 years. The higher elevation aspen stands would not be burned. The aspen stands that would be burned have been encroached heavily by juniper. The sagebrush cover on the fringes of these stands is dead, dying or stressed by competition with juniper which has decreased the density of live sagebrush, negatively impacting mule deer fawning cover. In the long term mule deer fawning habitat would be reestablished as the canopy cover of mountain big sagebrush increases within an estimated 8 to 10 years of the burn.

It is expected that fawning use may increase within aspen stands (as soon as temporary fences are removed) due to increased density of aspen and increased cover within these stands.

The temporary protective fences may alter wildlife movements and habits while they are in place. The aspen stands which would be fenced are small and large wildlife species (deer, elk, and antelope) would be able to move around these fences with few problems.

The reintroduction of fire would provide varied seral stages of plant communities, thus increasing plant diversity in the Stonehouse ecosystem. The resulting mosaic of vegetation associations is expected to improve habitat for most wildlife species. Fire has been a natural component of the evolution of plant and animal communities: its reintroduction would enhance continued natural ecological evolution (Houston, 1973; Wright and Bailey, 1982; Miller and Rose, 1999). However, impacts on wildlife in areas following burning cannot be generalized (Lyon, 1979, as cited in BLM, 1989). Ream (1981) reviewed 237 references on the effects of burning on small mammals and songbirds and found variable responses.

All riparian habitat is expected to improve with implementation of the Proposed Action. The wetlands would increase in hydric plant species and soil water retention, thereby providing a more reliable lotic habitat. Increased standing vegetation would improve food and cover for many birds, including sage grouse and small mammals, and provide increased forage for elk, deer, and antelope.

Within an overstory of shrubs, increased herbaceous cover would hold snow and soils in place, improve infiltration of snowmelt and rain, and allow more regulated runoff affecting timing and duration of streamflow. This balance is needed for the proper function of lotic riparian areas and aquatic habitats. This would then improve habitat for riparian and aquatic dependent species such as the inland redband trout and macroinvertebrates.

9. Woodland Resources (Juniper Encroachment)

Under the Proposed Action, juniper encroachment would be reduced and aspen communities revitalized by restoring the natural function of fire to the Stonehouse ecosystem.

D. Proposed Action Alternative (Cumulative Effects)

The cumulative effects of the Proposed Action would be ecological changes toward a functional watershed with ecological processes that are functioning. This would achieve those Standards for Rangeland Health which were identified during the 1999 evaluation as being partially or entirely due to exclusion of fire from the ecosystem. Specifically that is:

1. Watershed Function - Uplands

The mountain big sagebrush-bunchgrass ecological sites were determined to be functioning at-risk due to plant composition, community structure, and lack of direct ground cover. Livestock was not a causal factor. The Proposed Action would reintroduce fire into these sites which would restore plant species diversity, community structure by providing varied seral stages of plant communities and increase ground cover.

2. Watershed Function - Riparian/Wetland Areas

Much of the improvement of riparian and wetland areas would require changes in livestock management. The evaluation determined that fire is needed to reestablish hydric herbaceous species dominance on the wetland meadows. All riparian and wet meadows would improve with the 3 years rest from livestock grazing described in the Proposed Action.

3. Ecological Processes

The ecological processes are functioning but may be at-risk on wetlands, aspen, and mountain big sagebrush communities with livestock possibly being a causal factor. Indicators of at-risk processes are current plant composition, community structure, and plant species diversity. The proposed prescribed burns, juniper cutting, and 3 years of rest from livestock grazing would increase plant species diversity, plant community structure, and improve plant composition. These plant community changes would ensure the functioning of ecological processes.

An additional cumulative effect identified by interested publics was the amount of mountain big sagebrush habitat which would be in an earlier seral state following fire. It may be several years until it was to a stage of development which would have the same attributes for habitat as it does now.

In this analysis, the BLM Geographic Information System (GIS) was used to determine the combined acres of wildfire burns for the last 20 years and prescribed burns for the last 5 years. This was to determine how much of the mountain sagebrush community has been impacted by fire on the northeast portion of Steens Mountain surrounding the Stonehouse area. The amount was determined to be 14 percent. Overall, the average for all sagebrush communities was only 15 percent (BLM Ecological Site Inventory base).

Only 5 percent of Steens Mountain has been burned in the time periods indicated for wildfire and prescribed burning. This data indicates an abundance of habitat where fire has been excluded from the natural process.

CHAPTER V. PUBLIC COMMENTS AND RESPONSES TO COMMENTS

HYDROLOGY/WATER QUALITY

1. Oregon Natural Desert Association (ONDA), Page13. Following fire, the soil is exposed to runoff and the soil compaction and erosion that is caused by raindrops on bare soil (Branson et al., 1972; Wright and Bailey, 1982)

   Response: See EA. Environmental Consequences, Chapter IV. Burning may expose soil to runoff and soil compaction hazards; however, increases in western juniper and associated reductions in understory vegetation has also been found to increase bare ground and the potential for erosion (Bates, 1998; Eddleman, 1986; Miller et al., 2000). Following burning or cutting of western juniper, the percent bare ground is reduced and cover of herbaceous understory plants increases (Bates et al.; 1998, Miller et al., 1999). Accelerated soil erosion due to fire is most often caused by catastrophic wildfires which burn hot and consume most of the vegetation and organic material on the soil surface and the root systems of plants are killed. The prescribed burns described for Stonehouse would burn cooler with a mosaic of burned and unburned plant communities across the landscape. Additionally, the amount of coarse fragments and existing live root systems within these soils cause these sites to be less prone to overland flow and erosion action.

2. ONDA, Page 13. Burns closer to Riddle Creek more likely that sediment will be deposited in the stream.

Response: See response to Comment 1. Sediment has been found to increase in the first year following burning, but this is often a short-lived response. Gresswell, 2000, found that the increase in sediment following burning peaked in the first year then decreased to pre-burn levels or below in the second year. If left untreated, runoff and erosion will increase as the density of juniper increases and understory cover decreases (Wilcox, 1994). Compared to anthropogenic land use activities, fire is subordinate in influencing sedimentation and stream channel modification (Gresswell, 2000).

FISH AND AQUATIC

3. ONDA, Page 5. EA fails to address or reference how burning of uplands, meadows, and streamside riparian areas would benefit redband trout except water quality would improve. Minshall et al., 1995, found adverse impacts on macroinvertebrates used by trout and stream characteristics damaged 5 years after wildfire due to the siltation that occurred post fire.

Response: The cited study is from a forested system that experienced a severe, catastrophic stand-replacing crown fire (1988 Yellowstone wildfires). Impacts from this type of fire are more severe than in areas where fuel loads are not as great and fire intensity and behavior is less severe. Gresswell, 2000, has found that changes in macroinvertbrate communities do occur following burning, but potential impacts to fish are limited to the segment of stream where the fire occurred. Serious impacts are only likely to occur if the entire stream is directly adjacent to burned areas. Only portions of areas adjacent to Coyote Creek (intermittent drainage) and Riddle Creek are included in the project area.

WILDLIFE

4. ONDA, Page 3. EA fails to analyze cumulative impacts of burning on wildlife species. Impacts of wildfire and prescribed fires to the north.

   a. Removing cover from large areas and with the frequency shown on Map 1 would have drastic impacts on wildlife.

Response: See EA Cumulative Effects of the Proposed Action. Additionally, the map in Appendix D shows the perimeter of the areas to be burned. This perimeter will have some areas with higher percent burned (dense juniper stands) and areas with lower intensity burns (mountain big sagebrush). The goal is to have areas with approximately 40 percent burn up to 55 percent burn and create a mosaic of burned and unburned areas that would provide habitat for wildlife and be structurally diverse. The habitat and structural diversity would increase on a landscape scale.

5. ONDA, Page 3. Burning reduces structural diversity (Maser and Gashweiler, 1978) found breeding bird density and species richness increased as western juniper stands became more mature and structurally diverse in central Oregon.

   Response: Burning will initially reduce structural diversity within the burned area, but actually increase structural diversity on a landscape level. Currently, there is an almost continuous cover of sagebrush, western juniper, or sagebrush and juniper across the project area. Burning will provide open areas within this landscape. Breeding bird density was found to be high in areas with western juniper by Maser and Gashweiler (1978). However, the study occurred in an area where western juniper density and cover had not begun to negatively impact associated plants. There was a healthy shrub, grass and forb cover on these sites. Reinkensmeyer and Miller (2000), found that as western juniper density and cover increased, avian diversity increased, but then decreased as western juniper began to suppress shrubs and herbaceous vegetation. The structural diversity would be increased in the mountain big sagebrush stands by opening up the sagebrush canopy through the reintroduction of fire. Thomas et al. (1984) shows greater species diversity in the sagebrush/grassland type than in the juniper/sagebrush/grassland type.

6. ONDA, Page 3. Objective of decreasing juniper by 70 percent would not be consistent with improving wildlife habitat. The addition of more larger junipers would add additional cover for mule deer, Rocky Mountain elk, and numerous nongame species. Proposed SEORMP states "juniper woodland provides the third largest number of species supported within the analysis area" (Thomas et al., 1984).

   Response: See Proposed Action (actual burn objectives) EA, Pages 3 and 4. In addition review our responses to Comments 4 and 5. Also for further explanation: Thomas et al. (1984) also shows greater species diversity in the sagebrush/grassland type than in the juniper/sagebrush/grassland type. While juniper does add structural diversity to habitat, certain species such as sage grouse will not use an area with taller junipers since this provides additional perches for raptors.

7. ONDA, Page 3; Sheeter, Page 1. Burning out of sagebrush as proposed would negatively impact sage grouse.

   a. Sage grouse using meadows rely on sagebrush for shade and security from predators (Savage, 1969; Oakleaf, 1971), Page 29. EA calls for removing sagebrush on meadows.

   b. Burning 5 to 10 percent of the uplands would provide adequate forbs for sage grouse.

Response: It is expected approximately 40 percent of the meadows would actually be burned. Because of past grazing management, sagebrush has encroached on the fringes of most of the meadows within the proposed burn area. Burning would help to return hydric species dominance to these sites. Silver sagebrush (*Artemisia cana*) is the species of sagebrush encroaching many of these meadows. This species will resprout if burned and provide adequate cover within 3 years following burning. Burning a small percentage of the uplands, 5 to 10 percent, would create isolated areas of extremely palatable forage. Domestic livestock and native herbivores, large and small, would concentrate on these areas. Overall distribution of herbivores in the area would be negatively impacted by burning small areas within large continuous blocks of woody vegetation. The techniques used (see EA Description of the Proposed Action, Page 5.) and timing and intensity of the burn as planned will not burn all of the sagebrush in or along side the meadow areas, improving habitat diversity. The proposed burns are in conformance with the current Interim Sage Grouse Guidelines adopted by the BLM in Oregon.

8. ONDA, Page 4. Crawford and McDowell (1999) found large burns were not used by radio collared sage grouse for the first 2 years after wildfire. "All key structural components needed for successful sage grouse reproduction were found in burned areas 25 to 43 years old."

Response: Data regarding radio collared birds were not included in McDowell's Masters Thesis because there was not a large enough sample to be statistically valid. However, preliminary data from ongoing research on South Steens have found sage grouse hens nesting near and using the burns after hatching. While the fate of these birds and broods is undetermined at this time, more than just radio-collared birds have been observed in and adjacent to the burn areas. The determination is true that all key structural components needed for successful sage grouse reproduction were found in burned areas 25 to 43 years old was made on sites in the Hart Mountain National Antelope Refuge in 1997. These were wildfires that burn hot and do not result in the habitat mosaic of the prescribed burns proposed for the Stonehouse Allotment. In this report, data from prescribed burns on the Steens were not analyzed. There has been debate on the effects of fire on sage grouse habitat and populations. Miller (2000) identified four factors that determine the influence of fire on sage grouse habitat. They are (1) site potential, (2) site conditions, (3) functional plant group(s) that is limiting, and (4) pattern and/or size of the burn. Fire is a useful tool to enhance native perennial forbs and grasses. This most often applies to mountain big sagebrush communities where shrub cover can exceed 35 percent and perennial forbs can increase two to three times following burning (Pyle and Crawford, 1996; Miller, 2000).

9. ONDA, Page 4. Considerable habitat has been burned off in adjacent areas: EA, Page 31 makes the assumption that sage grouse will move to other adjacent available habitat during disturbance. It is not supported. Also, the impacts to the species of being forced off brooding habitat are not identified.

a. Sierra Club, Page 1. Is there really an excess of sage grouse habitat for them to go to during and after the burn?

Response: See our response to Comment 4 for the explanation of habitat burned. The percentages of burned area existing and proposed is consistent with the Interim Sage Grouse Guidelines. Burning will provide earlier seral habitats not currently available in the area. As described in the EA, sage grouse response to disturbance is that they will flush and fly to areas away from the disturbance. Since a moasic of burned and unburned habitat would exist following the fire, the birds may move back to the unburned areas within the project area in the same season.

10. ONDA, Page 4; EA, Pages 32 and 33. Crawford and McDowell (1999) found insects were reduced in abundance the first year after burning. This can have a strong negative affect on chick survival.

Response: Reports of insect response to burning has been mixed. McDowell (2000) did find that Coleoptera and Orthoptera decreased the first year post-burn but increased the second year post-burn on one site. This was the only site of the three studied on which second year post-burn data could be collected. Data for Formidae varied between sites and years post-burn. They also found that nutrient quality of forbs, also important in the diet of chicks, increased the first year following the same burn. Other studies by Fischer et al. (1996), Pyle and Crawford (1996), and Nelle et al. (2000), found that insect numbers were either not affected or increased following burning.

11. ONDA, Page 4, Draft Interim Management Guidelines for Sage Grouse recommends avoiding removing sagebrush within 300 meters of sage grouse foraging areas, including meadows and riparian areas.

Response: Interim guides for sage grouse adopted by Oregon and Washington BLM do not give distances for burning from these habitats.

12. ONDA, Page 4, Page 31 of EA. Migratory birds could be adversely impacted by burns (not burning at natural times).

Response: The sagebrush plant communities of southeastern Oregon burn during the late summer and early fall. This is the time of year when convective storms move through the area and vegetation is dry enough to sustain combustion (Miller and Rose, 1999).

Neotropical migrant birds require a variety of habitats. Work done in southeastern Oregon, northeastern California, and northwestern Nevada found that species diversity and richness were similar between burned and unburned sagebrush areas, but species composition was slightly different (EOARC file data). Burned areas favored ground feeders and nesters, while the unburned areas favored the shrub nesting species. When looking at the landscape level, the presence of both burned and unburned areas provides for the largest number of species. Migratory birds could be affected by the loss of habitat for those sagebrush obligate species. Many of these birds would move to other areas to breed and rear young. Prescribed fires in the fall usually occur when conditions are cooler than during the normal thunderstorm season which is usually the hottest and driest times of the year. Fewer plants, especially grasses and forbs, are killed by the burning under prescribed fire conditions. Even though grasses and forbs may be dormant during thunderstorm season, fire intensity is usually hotter and will kill plant growth areas even though they may be below ground surface. This could decrease ground cover following the fire and increase erosion or possible invasion of the site by exotic plant species.

13. ONDA, Page 4. Impacts to mule deer fawning not addressed.

    Response: This has been incorporated into the EA. See Environmental Consequences of the Proposed Action EA, Pages 28 and 29.

14. ONDA, Page 1; WASP, Page 1; Sheeter, Page1. BLM fails to state over the past 10 years considerable surface area has already burned in wildfires in the same area as the proposed control burn.

    Response: See EA Cumulative Effects of the Proposed Action, Pages 30 and 31.

15. ONDA, Page 3, Page 27 of the EA states that most of the area has been without fire 25 to 60+ years, but fails to mention 150 acres of the proposed burn area burned in 1999.

    Response: Areas burned in 1999 are a small percentage of the total area (approximately 4 percent) proposed for the reintroduction of fire. The areas burned in 1999 resulted in a complex mosaic of burned and unburned areas because of the plant communities burned and the conditions during the burn. These areas will be included in the total when calculating percentage of the area which burned.

16. ONDA, Page 1. There is insufficient evidence that the proposed control burn benefits wildlife and wilderness values.

Response: Fire is a natural component of these ecosystems; however, the influence of fire has been greatly reduced in the last 60 to 70 years. Fire suppression and livestock grazing practices have helped to essentially eliminate fire from much of the area. Returning fire to this system will help restore the natural function and processes that occurred prior to settlement by Europeans. Both the Stonehouse and Lower Stonehouse WSAs were identified in the Oregon Wilderness EIS (1989) as having the wilderness values of naturalness and outstanding opportunities for solitude and primitive unconfined recreation. The proposed prescribed burns would have short-term impacts on wilderness values, including loss of solitude during implementation. Some loss of solitude would be experienced when screening vegetation is removed. However, as described in the Proposed Action of the EA, only 500 acres within the two WSAs would be affected. The total acreage of these two WSAs equals 30,058, and solitude can be experienced in many locations due to topographic screening, as mentioned in the EIS. Reintroduction of fire into the landscape would benefit wilderness values, particularly naturalness, by increasing plant diversity, improving habitat for numerous species of wildlife. Also see responses to Comments 4-13.

17. ONDA, Page 2. Prescribed burns are not in conformance with planning documents because the proposed prescribed burns are not mentioned in the planning documents.

Response: The proposed prescribed burns are in conformance with the planning documents for Andrews Resource Area. When the Andrews Grazing Management EIS was completed in 1983, the Stonehouse Allotment was a pasture within the Alvord Allotment. The Rangeland Program Summary and Record of Decision for Andrews Resource Area which resulted from the analysis in the EIS displays on Page 7, Table 2 that there are 4,990 acres of prescribed burns to be completed for the Alvord Allotment.

18. ONDA, Page 3. The dense junipers on the east slope of the allotment are not proposed for burning. What is the rationale for this disparity? Why is hardly any prescribed burning proposed here?

Response: The east slope of the allotment is within WSAs. These areas would require some level of juniper cutting prior to burning. Preparation for the reintroduction of fire, i.e., cutting with chain saws is very controversial in WSAs. Miller and others (2000) found that as juniper density increased, shrub and grass cover decreased. As juniper becomes very dense the understory vegetation is reduced. Understory vegetation becomes too sparse to carry the fire from tree to tree, except during catastrophic fire conditions. Areas on the eastern slope of the allotment are beyond the historic fire regime.

19. ONDA, Page 13. The impact of fire pumpers and other off-road vehicle use is a major impact. Break down soil, kill brush and some of the tracks made would become roads. This was not analyzed.

Response: Driving fire equipment would be limited to existing roads and trails and predetermined fire lines. When driving on fire lines occurs, it is normally a one time event and very short term. The impacts you describe have not occurred on prescribed burns on Steens Mountain.

20. ONDA, Page 15. Burning is not needed as this is good wildlife habitat only needing a change in cattle use for recovery.

Response: The EA explains the need for improved livestock management and the need to reintroduce fire into this fire-dependent ecosystem. The habitat is good for some species in its present condition, but these plant communities are dynamic and will not stay in the current state. Western juniper is encroaching into the big sagebrush plant communities in areas of the allotment. Work on the Steens found that western juniper will grow slowly in its first 30 to 40 years, usually averaging 3 feet tall in that time period (Miller and Rose, 1995). Once it breaks the canopy of the sagebrush overstory (around 3 feet), growth rates increase. Over the next 10 years western juniper will grow another 3 feet. Other changes would include reduction in sagebrush cover and density to offset the increase in western juniper growth. This would continue to occur until the sagebrush is eliminated from the plant community. On shallow sites the herbaceous plant would also be greatly reduced. This may or may not occur on deeper soils. A similar situation occurs in areas of dense sagebrush. There is little herbaceous plant production beneath the dense shrub cover. Competition from the sagebrush reduce many of these grasses and forbs to a single leaf, just enough to offset the cost of staying alive. Removal of the dense shrub cover will allow for these understory plants to complete their annual life cycle. Please review responses 3-13.

21. ONDA, Page 16. FONSI is not supported. There is controversy regarding impacts of prescribed burning on many species of wildlife including sage grouse.

Response: As stated previously, habitat diversity and plant community structural diversity would be increased at the landscape level which would benefit wildlife. The plant communities and dependent wildlife species of Steens Mountain evolved with fire. Current research indicates that response of different species of wildlife varies from increased use, to no response, to lack of use depending on the amount of area burned and the patchiness of the burn. Scientific studies often have conflicting results and conclusions. Much of the work on sage grouse and fire has occurred in southern Idaho in the drier Wyoming big sagebrush plant communities. These areas have been drastically altered by cheatgrass invasion and an increased occurrence of fire. Fire under these circumstances has detrimental effects on many wildlife species including sage grouse.

The proposed project area is in the more productive, higher elevation mountain big sagebrush zone. These are native mountain big sagebrush communities and are not comparable to the Wyoming big sagebrush communities invaded by cheatgrass. Historical fire frequencies have not increased in these mountain big sagebrush communities, but have been reduced through fire suppression and grazing. Research on the Steens by Crawford and others on the effects of fire on sage grouse habitat has not been conclusive. Shifts in plant community structure and composition have been documented, but there have been no clear links to grouse populations. The complexity of the ecological system and number of factors controlling animal populations makes it difficult to draw conclusions about any one factor.

22. ODFW, Page 2. Prescribed fire would be necessary to improve livestock forage, but for wildlife protection we suggest limiting burned acreage to no more than 55 percent level in any area, not to 70 percent as proposed for the Ward Cabin area.

Response: The burn objectives have been adjusted to encompass this recommendation. See EA Description of the Proposed Action, specifically the Ward Cabin area would have a range of 40 to 55 percent of the area actually burned. All proposed burn percentages are in conformance with the Interim Guidelines for Sage Grouse.

23. WASP, Page 2. ONDA, Page 17, Item 11 of the FONSI is incorrect, and there is little supportive evidence in the EA that in WSAs a natural fire regime would be emulated resulting in a positive natural component being restored.

Response: Fire has been an important factor in the development of sagebrush steppe ecosystems (Daubenmire, 1968; Burkhardt and Tisdale, 1976; Wright et al., 1979; Gruel, 1985; Miller and Rose, 1999; Miller et al., 2000). There is evidence of many native peoples using fire as part of their culture and food gathering (Shinn, 1980). However, fire has been effectively removed from the system by fire suppression and reduction of fine fuels by domestic livestock. Historically, fires burned in late summer and early fall. Most plants in these communities, have developed adaptations to periodic burning including many native plants. Many of the forbs found in these communities are dormant at the time of burning or sprout from below ground structures protected from heat by the soil. Sagebrush, a prolific seed producer (~6,000,000 seeds/lb), needs mineral soil for the seeds to germinate and become established. These small seeds do not have specialized structures to carry the seed so they fall directly beneath the canopy of the mother plant. There is often an accumulation of organic material that could be several centimeters thick. Burning removes this layer and allows seeds to come in contact with mineral soil.

Animals in this area have also developed under the historic fire regime. While most animals are highly mobile and capable of moving to other areas immediately after a fire, other animals will hide in their burrows protected from the fire. Also, the lush, green growth following a fire

attracts many herbivores.

Plants often green up sooner and stay green longer following a fire. Smaller animals may also take advantage of the flush of annual forbs common after burning.

24. ONDA, Page 3. As western juniper increased in size and density herbaceous production decreased, plant species richness did not change in the Owyhee Mountains.

Response: Work on the Steens by Miller et al. (2000) and Bates et al. (2000), found that the plant species diversity decreased sharply as western juniper density and cover increased. Fewer and fewer species were found to be common, or easily found, as juniper density increased. In very dense stands, two to three species made up 90 to 95 percent of the total cover, while in open sagebrush stands 10 to 15 species made up 90 to 95 percent of the plant cover. When juniper stands were cut, species richness (total number of species) might not have changed but the number of individual plants within each species increased as well as the population between species was more evenly represented (Measurements of Dominance and Evenness).

25. ONDA, Page 5; WASP, Page 5; EA, Page 23. Insufficient information on where juniper cutting would occur in or outside WSAs?

Response: All juniper cutting is proposed outside of WSAs. To clearly address this concern the map in Appendix D has been modified to include all locations of aspen and remnant aspen stands which would require juniper cutting for the reintroduction of fire into these stands. These are the only locations where juniper cutting would occur. Also see EA Description of the Proposed Action.

26. ONDA, Page 6. Three years of rest may not allow maximum reestablishment after burn of bitterbrush and mountain mahogany. These species would benefit from prolonged rest. Forbs may not respond with an increase within 3 years following burning. Two years of rest may not be adequate for maximum reestablishment of grasses.

Response: Much of the response to burning from grasses and forbs is from established plants. BLM's policy is two growing seasons of rest. Most of the herbaceous species will reach fruition in the first growing season, and additional rest for herbaceous species is only a concern if there is 2 years of drought following the burn. Recent work on the Steens (Miller et al., 1999) found that there can be a depression in cover of grasses and forbs in the first year following burning, but those levels increase to, or surpass pre-burn levels in the second year after the fire. Most of the shrub species grow from seed and often do not reestablish in the burn for 2 to 3 years or more. Therefore, timing of grazing and utilization levels can be important for reestablishment of palatable shrubs such as bitterbrush and mountain mahogany. The increase in green plant material and the extension of the green growth period due to nitrogen release from the burn should reduce grazing pressure on the young bitterbrush and

mountain mahogany plants.

A study by Ganskopp and others (1998) found that cattle grazing on bitterbrush seedlings was significantly less in areas where green forage was available. Once forage matured, browsing of young bitterbrush increased significantly.

27. ONDA, Page 16. The prescribed burning is a veiled attempt to increase livestock forage and that is why it is in every alternative except the no action.

Response: Burning in this area will reintroduce an important component of the ecosystem and help revitalize important ecological processes. Nutrients tied up in dead or dying plant material will be released. Without periodic fire, these nutrients have been allowed to accumulate in these tissues and are unavailable for use by micro and macroorganisms in the system. The prescribed fire would also reduce the influence of western juniper and sagebrush on these plant communities. Response to burning would benefit the livestock grazing, but would also benefit the ecological system. This prescribed fire project would be appropriate in the absence of livestock grazing in the area. Recent events throughout the west and large-scale planning efforts (i.e., ICBMP) have identified that the reintroduction of fire into these ecological systems is important for the environmental health of the region.

28. Guy Sheeter, Page1. "The description of the 8" tall game proof fence is incomplete, No locations with numerous wildlife impacts."

Response: The locations of the fences were not included in the EA or on the attached maps due to the fact that areas are small and not all areas would require fencing. However, we have modified the map in Appendix D to show the locations of aspen stands and assumed all burned stands would need some protection fences. We have also provided a detailed description of the construction, monitoring, and determination of longevity of these temporary fences in the EA in the description of the Proposed Action and Alternatives, Page 4. The fences will be 8 feet tall with net galvanized wire and metal posts. The fences may alter wildlife movements and habits while they are in place. This is necessary though for the rejuvenation of the aspen stand since wildlife alone can impact the new aspen growth. After 2 to 5 years, when the aspen stand has reached a height above which grazing by wildlife or livestock will not impact the young trees, the fence would be removed and wildlife would return to using much of the area as before. The areas covered would be fairly small and large wildlife (deer, elk, and antelope) should be able to move around these fences with few problems.

29. Western Heritage Enterprises. There is the potential of having upward of 150 to 200 elk in the area, and subsequent grazing by these animals on a new burn for any length of time could delay the anticipated response of the desirable species. This should be closely monitored.

Response: This is another reason why it is important to complete landscape level burns so that repeat defoliation does not occur from animals concentrating on small areas. This is more of a problem on Steens Mountain (given current elk populations) on limited habitat types of high palatability such as aspen stands. This is one of the reasons for having the 8-foot tall temporary fences around burned aspen stands until adequate height of aspen saplings is attained. Elk, deer, and livestock would utilize the young aspen shoots to the point that they are not able to form a new stand. This could happen with other vegetation as well and we agree rangeland monitoring is critical (see EA description of the Proposed Action).

CHAPTER VI. CONSULTATION AND COORDINATION

Original EA published in the Burns Times-Herald April 26, 2000.

Tour with all interested publics that commented on EA invited on October 19, 2000.

Tom Davis Livestock
Harney County Court
Oregon Department Of Fish and Wildlife
Sierra Club

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CHAPTER VIII. APPENDICES

APPENDIX B

Allotment Evaluation Results

In April 1999, a formal evaluation of the Stonehouse Allotment was completed by an Andrews Resource Area ID Team which included summary, analysis, and interpretation of all available rangeland monitoring. A summary of data from this evaluation is as follows:

Key plant species with target utilization are as follows:

Key Species	Utilization Target
Idaho fescue	50%
Nebraska sedge	45%
Baltic rush	45%
Kentucky bluegrass	50%

In 1983 and 1984, an Ecological Site Inventory was completed for the allotment which identified ecological status as:

Ecological Status	Acres
Early seral	0
Late seral	4,085
Mid-seral	5,913
Potential natural community	0
Not rated	393

This inventory did not identify the wetlands or riparian ecological sites, which were mapped as inclusions with uplands sites. There is no current assessment of range condition.

Average actual use for livestock for the years 1993 to 1998 was 1,667 AUMs and in 1992 the allotment was rested. The current permitted use is 2,117 AUMs. The potential livestock stocking level as calculated based on 1993 to 1998 monitoring data is 2,285 AUMs. Average utilization during this period (1993 to 1998) was 32 percent for uplands and 71 percent for riparian and wetlands. This monitoring period evaluated had above average precipitation, except for 1994, which lacked moisture during the growing season. Rangeland trend is stable on the uplands and the meadows. The meadows (approximately 700 acres) are mid-seral ecological status with hydric species representing 36 percent of the composition (by frequency of occurrence) which in a later seral stage 60 percent + of hydric species would be expected on these wetland meadows. Ground cover is adequate to ensure stability of

the site, however, the effective capture and release of water in these headwater meadows is not near its potential.
There are no monitoring sites that represent the deep loamy subalpine slopes, loamy 16 to 25-inch precipitation, stony loam and swales ecological sites (approximately 5,408 acres) which apparent trend indicates as stable to slightly downward. These ecological sites have juniper encroachment that is stressing mountain sagebrush on some areas, while on other sites the mountain sagebrush communities are mature and decadent, limiting herbaceous understory development.

Most of the low sagebrush, gravelly ridge ecological sites are currently near site potential, with a stable trend (approximately 4,085 acres within the allotment).

Riparian functionality is thoroughly discussed in the following section. This evaluation provided the following analysis of the Standards for Rangeland Health developed for Oregon and Washington.

ANALYSIS OF RANGELAND HEALTH STANDARDS AND GUIDELINES FOR LIVESTOCK MANAGEMENT

A. Analysis of Rangeland Health Standards

1. Watershed Function - Uplands

This standard was achieved, however, the watershed's functionality is at-risk due to plant composition, community structure, and lack of direct ground cover on the deep loamy subalpine slopes, stony loam and swale ecological sites. The current livestock grazing practices are determined not to be a causal factor. The causal factors were determined to be disruption of the historical fire frequency which provides for juniper invasion and woody species dominance of these ecological sites. Historical livestock grazing was a contributing factor to the disruption of historical fire frequency.

a. The indicators used on deep loamy subalpine slopes, stony loam and swale ecological sites:

1) No recruitment of seedlings or young plants.

2) Shrub and tree dominated communities are losing herbaceous species.

3) Existing herbaceous species exhibit poor vigor.

4) The mountain sagebrush overstory is decadent and the density

of young juniper is increasing.

5) There is a lack of litter and ground cover to protect the soil surface.

6) Slight accelerated erosion is occurring.

b. The indicators used on mountain gravelly ridge ecological sites.

1) The mountain gravelly ridges' ecological sites have plant composition and community structure that provides for functional uplands.

2) No upland accelerated erosion was detected on the mountain gravelly ridges' ecological site.

3) The amount and distribution of plant cover protects the soil surface.

4) There is adequate plant litter and residual cover to protect soil surface and to provide for nutrient cycling.

5) The current communities on these sites provide for nutrient cycling.

2. Watershed Function - Riparian/Wetland Areas

This standard was not achieved for all lentic or lotic systems. The current livestock grazing practices are determined to be a causal factor.

a. The indicators used are:

On Riddle Creek:

1) Some point bars are not revegetating.

2) Low channel width:depth ratio.

3) Low channel sinuosity.

(4) Active floodplain is limited or not accessible by average flood

events.

(5) Lack of young willow age class.

On Wetland Meadows:

1) Lack of hydric species in the plant composition.

2) Encroachment of xeric species into the meadows.

3) Soil hummocking and vertical denuded cuts on portions of the meadows.

3. Ecological Processes

These processes are achieved but are functioning at-risk. The current livestock grazing practices may be a causal factor.

a. The indicators used are:

1) Existing plant composition.

2) Plant community structure.

3) Plant species diversity. This is on mountain sagebrush ecological sites. The decline of these indicators are due to a fire-dependent ecosystem in which fire has been removed through grazing practices (removal of fine fuels changing fire frequency) and fire suppression practices. This is also true on portions of the wet meadows within the Stonehouse Allotment.

4. Water Quality

The water temperature standard is not achieved on Riddle Creek and the water temperature is unknown on Stonehouse and Little Stonehouse Creeks and their tributaries. The current livestock grazing practices are determined to be a causal factor.

a. The indicators used are:

1) Water temperature greater than 17.8 °C during a 7-day rolling

average of the maximum water temperatures.

5. Native, Special Status, and Locally Important Species

The standard is not achieved for redband trout. The current livestock grazing practices are determined to be a causal factor.

a. The indicators used are:

1) High water temperature.

2) Bank instability.

3) Riparian plant species composition lacking hydric species.

4) Lack of deciduous woody species for shading.

B. Conformance with Guidelines

The evaluation further determined that current management is not in conformance with the guidelines for livestock grazing management on public lands in Oregon and Washington, specifically Guidelines 1 and 6 as explained below:

1. The season, timing, frequency, duration, and intensity of livestock grazing are not based on the physical and biological characteristics of the site and management unit.

6. Current management does not provide periodic rest from grazing for rangeland vegetation during critical growth periods to promote plant vigor, reproduction, and productivity.

APPENDIX **C**

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